

ASSESSMENT AND TREATMENT OF LOW-RATE HIGH-INTENSITY PROBLEM BEHAVIOR

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Functional analysis of low-rate aggression was conducted during extended observation periods and showed behavior to be maintained by positive reinforcement. Treatment consisted of variable-momentary differential reinforcement of other behavior and was successful in reducing problem behavior throughout these extended observation periods.

DESCRIPTORS: functional analysis, low-rate aggression, variable-momentary differential reinforcement of other behavior

Assessment and treatment of low-rate high-intensity problem behavior poses a unique challenge. Because these behaviors occur infrequently, it is often difficult to identify and manipulate the antecedents and consequences, thus making treatment development and evaluation difficult (Sprague & Horner, 1999).

O'Reilly (1996) examined a methodology consisting of regular probe sessions for assessing and treating low-rate problem behavior exhibited by an individual who had been diagnosed with moderate mental retardation. The functional analysis consisted of 1-hr probes, conducted twice per day. Each probe consisted of one 10-min alone, attention, demand, and play session (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994). The results of the functional analysis probes were inconclusive (i.e., responding was undifferentiated across conditions).

One explanation for these inconclusive results may be that the length of the observation period (1 hr) was insufficient to adequately observe instances of low-rate behavior. Thus, a longer observation period may increase the probability that the problem be-

havior will be observed. The purpose of this study was to assess and treat problem behavior under extended periods of observation.

METHOD

Participant, Setting, and Data Collection

Polly was a 15-year-old girl who had been diagnosed with profound mental retardation and who had been admitted to an inpatient unit for the assessment and treatment of aggression, which had resulted in bruising to others. Aggression consisted of hitting, kicking, punching, grabbing, pulling hair, and throwing objects from less than 0.3 m from another person.

All assessment and treatment observations were conducted in the living area of the inpatient unit. Frequency data on aggression were collected in half-hour intervals from 9:00 a.m. to 4:00 p.m., Monday through Friday, using paper-and-pencil methods. Observers were direct care staff and behavioral therapists who were familiar with data-collection procedures.

A second observer independently collected data on the participant's and experimenters' behaviors during 43% of the intervals. Interobserver agreement was calculated by

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dividing the number of agreements, which was defined as both observers reporting the same number of behaviors during a given interval (i.e., exact agreement), by the number of agreements plus disagreements and multiplying by 100% ($M = 98\%$; range, 98% to 100%). Procedural integrity (i.e., correct delivery of the antecedent events and consequences) averaged 95.8% (range, 60% to 100%) during the functional analysis and treatment evaluation.

Functional Analysis

A functional analysis of Polly's aggression was conducted using procedures similar to those described by Iwata *et al.* (1982/1994) and initially consisted of 10-min sessions. However, she did not emit any aggression during this initial analysis. Therefore, the functional analysis was modified so that it was conducted Monday through Friday, 9:00 a.m. to 4:00 p.m. Experimental conditions (attention, demand, and play) were randomly ordered, and one functional analysis condition was conducted in a given observation period.

During the attention condition, Polly had access to toys throughout the day. Brief verbal reprimands were delivered contingent on aggression; otherwise, minimal attention was provided and only essential demands (e.g., brushing teeth) were presented. Data collected during these periods of essential demands were included with the other data in the attention conditions. During the demand condition, Polly was instructed to complete a series of activities of daily living and academic tasks using a graduated guidance prompting procedure. Each demand period lasted 45 min, during which tasks were continuously presented. The demand was terminated and task materials were removed for 30 s contingent on aggression; brief praise was delivered contingent on compliance. Following each demand period, Polly was given a 15-min break, during

which she received minimal interaction. Data collected during these break periods were included with the other data in the demand condition. This sequence of demands and breaks was repeated throughout the observation period; thus, she was typically exposed to seven demand periods per day. Finally, during the toy play condition, Polly had access to toys and received continuous noncontingent attention (verbal and physical). Aggression was ignored, and only essential demands were presented. Data collected during these periods of essential demands were included with the other data in the toy play condition.

Treatment Evaluation

Baseline was identical to the attention condition in the extended functional analysis. Treatment consisted of variable-momentary differential reinforcement of other behavior (DRO) (Lindberg, Iwata, Kahng, & DeLeon, 1999). The average variable-momentary DRO interval was 15 min and was based on caregivers' report of the densest acceptable schedule of reinforcement. The interval was randomly chosen (without replacement) from periods of 5, 10, 15, 20, or 25 min. Reinforcement consisted of 1 min of physical contact and verbal praise, and was delivered if aggression did not occur at the end of the DRO interval (i.e., at the moment the timer sounded). Aggression was ignored (i.e., extinction). A reversal design (i.e., ABAB) was used to evaluate the efficacy of the intervention.

RESULTS

During the functional analysis (Figure 1, top panel), aggression occurred only on days in which the attention condition was conducted, suggesting that Polly's aggression was maintained by positive reinforcement in the form of access to adult attention. The initial introduction of variable-momentary DRO

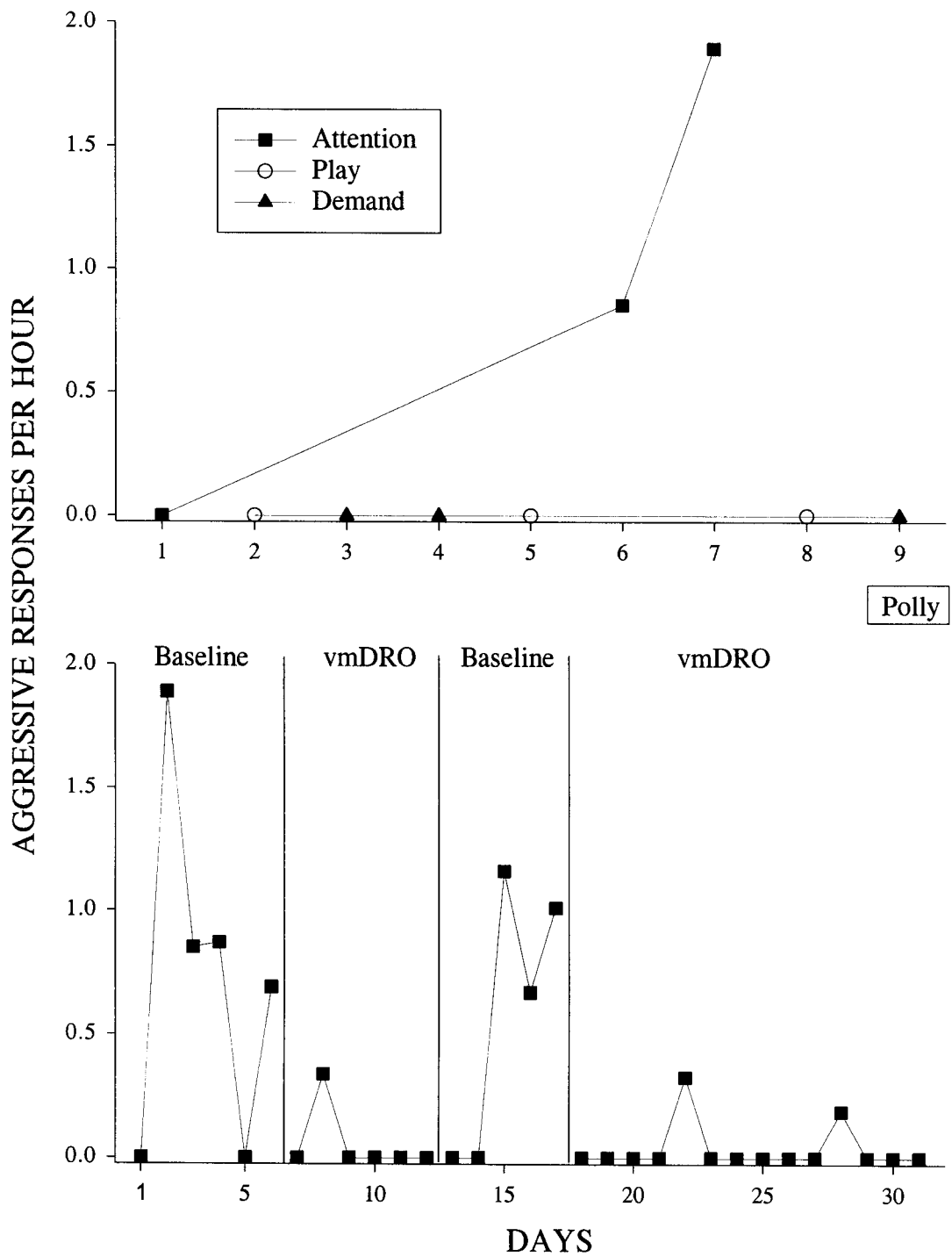


Figure 1. Number of responses per minute of aggression during the functional analysis (top panel) and treatment evaluation (bottom panel).

led to a decrease in aggression (Figure 1, bottom panel). Responding eventually increased during the reversal to the baseline phase and decreased during the final variable-momentary DRO phase. Treatment resulted in an 81% decrease in aggression compared to baseline.

The results of this study showed that conducting longer observation periods was successful in assessing and treating low-rate problem behavior maintained by attention. A functional analysis conducted from 9:00 a.m. to 4:00 p.m. showed that aggression was maintained by attention. Subsequent treatment during these observation periods demonstrated that variable-momentary DRO was effective in decreasing problem behavior.

This study extends current research on functional analysis of problem behavior by demonstrating its utility for identifying the function of low-rate behavior, a problem for which functional analyses historically have been ineffective (Sturme, 1995). In addition, this study replicates the findings of Lindberg *et al.* (1999) and extends that study by demonstrating its efficacy over longer periods of time.

The effectiveness of variable-momentary DRO may be partially due to the criterion for reinforcement, given that it is less stringent than other DRO schedules (e.g., fixed interval DRO). In this study, Polly rarely missed opportunities for reinforcement, meeting the criterion for reinforcement in 99% of the opportunities. Thus, it is possible that variable-momentary DRO resulted in an alteration of the establishing operations for attention (i.e., satiation). Furthermore, it is possible that extinction was a key component in the reduction of problem behavior given the periodically long absence of

reinforcement under the variable-momentary DRO schedule.

One limitation of this study may be the intensive level of behavioral support needed to conduct these observations. At least one staff person was with Polly at all times, which may not be feasible in all settings. Therefore, future studies should examine the possibility of conducting these extended assessment and treatment sessions in less intensive settings. Another limitation may be the necessity of long periods of deprivation from attention and the continual presence of demands. However, the presence of these establishing operations resulted in a differentiation in responding during the functional analysis and the eventual treatment of aggression. Future studies should conduct parametric analyses to determine the optimum length of these extended observation periods.

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